

REMARKS

The applicant appreciates the examiner's review of the prior art and the present application. The applicant requests reconsideration of the pending claims in view of the following remarks. Claims 3, 6 and 13-24 were previously withdrawn. Claims 1, 2, 4, 5 and 7-12 are thus currently pending reconsideration.

35 U.S.C. § 103 (a) Rejections – Obviousness (Perry et al. and Schmidt)

Claims 1-2, 4-5 and 7-12 are rejected as obvious with respect to US 4776171 to Perry et al. (hereinafter "Perry") in view of US 3,243,259 (sic) to Schmidt. See Office Action, p. 2. Applicants respectfully point out that Schmidt is actually US 3,243,359, (hereinafter "Schmidt") and NOT US 3,243,259.

Claim 1 defines, in relevant part, a method for removing contaminants from water by distillation. The method includes driving an electric generator by means of a thermal cycle engine and using at least a portion of the electrical power capacity of the generator to power a water distillation unit. Additionally, the method conveys heat output from the thermal cycle engine to the water distillation unit. By conveying this heat to the water distillation unit, the water distillation unit uses less electrical power to purify the water.

Perry fails to teach or suggest such a method. Rather, Perry discloses an integrated power system that utilized various sources of energy (solar, wind, etc.) to perform functions such as operating a reverse osmosis system or providing lighting to an island (see Fig. 2; col. 2, line 60 through col. 3, line 10). To the extent that Perry has a water purification system, Perry's water purification system is a mechanical/hydraulic system that utilizes neither heat nor electricity to purify the water (col. 19, line 50 to col. 23, line 43; particularly col. 19, lines 53-62 and col. 20, lines 33-43). In particular, Perry's integrated power system includes a low-heat engine that is powered by either waste heat from a methanol engine or heat collected by flat plate solar collectors (Fig. 2; col. 16, lines 24-34). The low-heat engine creates a mechanical output that can be used to either drive a hydraulic pump (which, in turn, drives the water purification system) or directly drive the water purification system (col. 17, lines 64 to col. 18, line 10). The mechanical and hydraulic output from the low-heat engine and/or hydraulic pump are the only inputs into the water purification system (other than the sea water) (see Fig. 2). In other words, Perry's water

purification system does not use electricity or heat from an electrical generator/thermal cycle engine, as required by claim 1.

The Office Action suggests that Figure 2, which generally shows a block diagram of Perry's overall system, shows that Perry's water purification system uses electricity. Applicants respectfully disagree. In making this suggestion, the Office Action appears to be focusing on the language within the dashed block (e.g., the distribution system). However, Applicants would like to point out that the language contained within the lower right box of the dashed box clearly states that the distribution system does not supply electricity to the water purification system. In particular, Figure 2 indicates that the distribution system can supply electricity to "others, *less* AC, water purification, refrigeration, and water pump". The term "less" indicates that the distribution system supplies electricity to a variety of components/systems (e.g., street lights, telephone, etc.) *except* the AC, water purification, refrigeration, and water pump systems. This is consistent with the remainder of Perry's disclosure because, as discussed above, the water purification system (and the refrigeration, AC, and water pump) is mechanically and hydraulically driven (e.g., by the low-heat engine), not electrically driven. Therefore, Perry does not need to supply electricity to the water purification system. To do so would be considered a waste of electricity in Perry's system (a reverse osmosis system was apparently chosen so as to require no heat /electricity).

Moreover, to the extent that Perry discloses the use of waste heat, Perry does not use waste heat in the water purification system. Rather, Perry's methanol engine conveys waste heat to the low-heat engine, not the water purification system as required by claim 1. As discussed above, the mechanical and/or hydraulic output of the low-heat engine drives the water purification system, not the waste heat from the methanol engine. Additionally, Applicants would like to point out that the low-heat engine is clearly not part of the water purification system because it is located a large distance away from the water purification system (e.g., on the other side of the island shown in Figure 1). If the low-heat engine were part of the water purification system, it would be nearer to (e.g., adjacent to) the reverse osmosis system 5.

The Office Action also suggests that it is well known in the art to use both electricity and waste heat to drive water purification systems and water distillation systems (see office action page 3, first sentence). However, as discussed above, Perry does not use either electricity or waste heat to drive the water purification system (e.g., it is mechanically and hydraulically

powered). Additionally, although Perry's water purification system is a reverse osmosis system that does not require heat, Perry also includes a distillation unit that is used to produce methanol (col. 5, line 20 to col. 12, line 40). The methanol distillation system is electrically driven and does not use waste heat from any source (Fig. 2; col. 12, line 23). If it were obvious to use waste heat in a distillation system, then one would think that Perry would have used waste heat in the methanol distillation system. However, Perry fails teach or suggest that the methanol distillation system may use waste heat to reduce the amount of electricity required.

In a similar manner, Schmidt fails to teach the deficiencies of Perry. The Office Action suggests that Perry does not disclose using both electricity and waste heat to drive a water distillation system, and suggests that Schmidt teaches the missing limitations. However, Applicants respectfully disagree. In particular, nowhere does Schmidt teach using electricity from an electric generator driven by a thermal cycle engine to power a water distillation unit. In fact, Schmidt fails to disclose if its distillation unit utilizes any electrical power at all.

Additionally, Schmidt also fails to disclose conveying heat output from the thermal cycle engine to the water distillation unit. Rather, Schmidt's thermal power plant heats a working fluid that passes into a turbine, where it expands while doing work (col. 1, lines 35-60). The expanding working fluid then passes through a pipe 11 to waste heat receivers 5/6. The waste heat receivers 5/6 receive heat from the working fluid and serve as an intermediate coolers. The waste heat collected by the waste heat receivers 5/6 from the working fluid is then used to heat the water coming into the distillation plant (col. 1, lines 66-70; col. 2, lines 24-31). In other words, the waste heat used by the distillation unit is from the working fluid and is not conveyed from the thermal cycle engine, as required by claim 1. Therefore, Schmidt fails to teach or suggest either using electricity from an electrical generator driven by a thermal cycle engine or using waste heat from the same thermal system engine in the water purification system, as required by claim 1.

Therefore, because neither Perry nor Schmidt teach or suggest, alone or in combination, all limitations of claim 1, the combination cannot make the claim obvious. Additionally, claims 2, 4, and 5, which depend from claim 1 are allowable for at least the same reasons discussed above with respect to claim 1.

In a manner similar to claim 1, claims 7 and 8 also define methods that use waste heat from a thermal cycle engine and electrical power from an electric generator that is driven by the

thermal cycle engine to operate a water distillation system. Accordingly, claims 7 and 8 are also allowable over the combination of Perry and Schmidt. Moreover, claims 9-12, which depend from claim 8 are allowable for at least the same reasons.

CONCLUSION

Applicants respectfully submit that the presently claimed invention is not obvious in view of the combination of Perry et al. and Schmidt because, to the extent one might combine Perry et al. and Schmidt, the resulting combination simply would not include all the elements of the presently claimed invention. Additionally, neither reference teaches, or suggests, using electricity and waste heat from the same thermal cycle engine to drive a water purification system. For at least those reasons, Applicants respectfully submit that the pending claims are not obvious with respect to Perry in view of Schmidt, and request withdrawal of the obviousness rejections under 35 U.S.C. § 103(a). Accordingly, Applicants also respectfully submit that all claims presently in the application are believed to be allowable over the art of record and early notice to that effect is respectfully solicited.

Applicants do not believe that any extension of time is required. However, if an extension of time is required please charge the associated fee and any additional fees required by this paper or credit any overpayment to Deposit Account No. 19-4972. Applicants also request that the examiner contact applicant's attorney, Jonathan Lovely, if it will assist in processing this application through issuance .

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Respectfully submitted,

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